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ABSTRACT

To test conclusions of previous investigations about the influence of team teaching upon task interdependence among elementary school teachers, University of Oregon researchers took measures in 14 elementary schools in six eastern states before and after installation of a multiunit instructional organization. Based upon research at Stanford University and the University of Oregon, assumptions were that staff restructuring into organized work teams would create task interdependencies among otherwise independent and isolated teachers, shift the locus of control over microeducational policy to small collegial groups, and enhance teachers' sense of work autonomy and job satisfaction. Thirteen other schools generally matched by district served as controls. Measures of decision making structures, instructional organization, faculty communication, teacher sentiments, and a variety of other attributes of the schools and their staffs were repeated at 6-month intervals from the spring of 1974 through the spring of 1976. Results indicate that change in schools' structure increases the incidence of collaborative teaching and collegiality of the decision making system, but have no dependable effect on sentiments of job satisfaction or work autonomy. Examination suggests that emergent team teaching arrangements in multiunit schools are insufficiently enduring to jeopardize teacher discretion and that increased collegiality rarely implies a radical power redistribution in the school's governance system. Tables of data appear throughout the report; three reference pages are appended. (CJH)

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TASK INTERDEPENDENCE, COLLEGIAL GOVERNANCE, AND TEACHER ATTITUDES IN THE MULTIUNIT ELEMENTARY SCHOOL*

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Abstract

Measures were taken in 14 elementary schools in six Eastern states before and after installation of a Multiunit organizational structure to test the conclusions of previous investigators, viz., that the restructuring of the elementary school staff into formally organized work teams would create task interdependencies among otherwise independent and isolated classroom teachers, shift the locus of control over micro-educational policy to small collegial groups, and enhance teachers' sense of work autonomy and job satisfaction. Thirteen other schools generally matched by district served as controls. Change in the structure of the schools was found to increase the incidence of collaborative teaching and the collegiality of the decision-making system but to have no dependable effect on teacher sentiments of job-career satisfaction or sense of work autonomy. Further examination suggested that the emergent "team teaching" arrangements in the multiunit schools were insufficiently intense or enduring to jeopardize teacher discretion and that increased collegiality rarely implied a radical redistribution of power in the school's governance system.

TASK INTERDEPENDENCE, COLLEGIAL GOVERNANCE, AND TEACHER ATTITUDES IN THE MULTIUNIT ELEMENTARY SCHOOL

One of the more ambitious and persistent reforms for elementary education during the last quarter century has been the proposal that operating responsibility for instruction be shifted from the individual classroom teacher to instructional personnel formed into small, collaborative work groups. While the idea has historic antecedents (Shaplin, 1964) it has been the central ingredient of a number of well-promoted plans of the post-World War II years, such as Team Teaching, the Trump Model School Plan,Differentiated Staffing, the Open-Corridor Plan, and most recently the Individually-Guided Education/ Multiunit School program (IGE/MUS) developed and advocated by the University of Wisconsin's R & D Center (Klausmeier, Rossmiller, & Saily,1977). It is a radical innovation in the sense that it envisions a fundamental restructuring of role relationships in the elementary school between students and teachers and among members of the instructional staff as well. Unlike many curricular and instructional reforms which can be carried off by teachers acting unilaterally within their own classrooms, team organization necessarily entails the large-scale adjustment of relations in the school's work and governance systems.

When we began the present investigation, empirical studies of the implications of the team structure for organizational processes and staff relationships in the school were sparse. However, two major studies had appeared in the early 1970's, conducted by sociologists of education in federal R & D Centers, which reached strikingly parallel conclusions, and these studies directly instigated our own.

The Instigating Studies

The studies at the Stanford Center for Research and Development in Teaching (Meyer & Cohen, 1971) and at the University of Oregon's Center for the Advanced Study of Educational Administration (Pellegrin, 1970a, 1970b) pointed to three kinds of consequences likely to ensue from establishing a work-team structure in the elementary schools: (a) reduction in the isolation of teachers from their colleagues, particularly in regard to the intimate details of day-by-day instruction; (b) a shift in the locus of control over the design and operation of the instructional program from the administrative hierarchy on the one hand, and from discretion of the individual teacher on the other hand, to small collegial groups within the faculty; and (c) as a result of the foregoing, an increase in teachers' feelings of control over their work and in the satisfactions derived from the occupation and the job.[1]

The Stanford group's findings were based on questionnaires administered to some 230 classroom teachers in eight K-6 elementary schools in the San Francisco Bay area selected on the twin criteria of open-space classroom architecture and the presence of formally-organized work teams and another seven conventional schools chosen for comparison. All of the "open schools," as Meyer and Cohen called them, had been operating at least a full year with the team organization, some up to four-and-a-half years. Pellegrin had selected three elementary schools in Wisconsin identified by staff members of the Wisconsin Research and Development Center for Cognitive Learning as active participants in that Center's program for implementing the IGE/MUS model. All were in their initial year of implementation. Three non-participating schools from the same districts served as the comparison base. Pellegrin

took data from the professional staffs by interviews as well as questionnaires, although systematic comparisons in his reports relied mainly on the questionnaire responses of the classroom teachers, approximately 130 of them.

Reduced teacher isolation. Lortie, a sociologist whose writings about conditions of the schools' work setting were especially formative for both the Stanford and Oregon studies, was among those to point to isolation as an endemic characteristic of the teaching occupation (Lortie, 1964, 1969). He had written that the core tasks of the occupation are performed in nearly total privacy, behind closed doors of the self-contained classroom and insulated from supervisory personnel and colleagues alike. The school's cellular structure, reflected in its one-teacher-one-class deployment pattern and its "egg-crate" architecture, gives teachers little occasion to see one another at work or to share their immediate concerns. Lortie (1964) argued that a set of understandings subscribed to by administrators and teacher colleagues arise to reinforce the separation--the "autonomy-equality norms" which hold that the teacher should be free from the interference of other adults while teaching, teachers should be considered and treated as equals, and teachers should act in a nonintervening but friendly manner toward one another.

That the work-team organization reduced teacher isolation was suggested by two sorts of evidence from the exploratory investigations. Pellegrin (1970b) noted distinct differences between his comparison schools in the number and distribution of "work dependencies" of classroom teachers. When asked to list persons in the school upon whom their own task performance closely depended, teachers in the team-organized environment listed twice as many names as teachers in the conventional schools. While the few depen-

dencies that existed in the latter schools were almost exclusively between individual teachers and the principal, in Pellegrin's IGE/MUS schools numerous between-teacher dependencies appeared and listings of the principal were rare.

The Stanford investigators found a substantially greater volume of task-related communication among teachers of team-organized than conventional schools (Meyer & Cohen, 1971, Chap. 2). They had asked teachers to indicate the frequency of their informal communication with other teachers on a number of topics related to the teaching task, including such things as grading students, curriculum planning, teaching specific lessons, and student discipline.

In the eyes of some, the conversion of teaching from a solitary to a social undertaking should be gratifying to teachers, or at least to many of them. Proponents of team teaching depict work isolation as a stultifying condition for the teacher. The Stanford investigators sought to test the idea in their study but were unable to find a direct relationship between task-related communication and their measure of teacher job satisfaction. This suggested to them that the group conduct of instruction may introduce interpersonal strains or other dissatisfying pressures on the teachers that offset the gratifications of sociability (Meyer & Cohen, 1971, p. 86).

Collegial control of micro-educational policy. In both investigations a distinction was drawn between the governance of classroom instruction and the governance of educational affairs of the school more generally, and the evidence agreed that teacher groups came to play a more central role in decision making in both domains. Of the two, Pellegrin's investigation offerred the more variegated information on the matter.

In one approach he asked teachers to describe the parts they and others played in making decisions about five core tasks of teaching. Comparisons of questionnaire responses led Pellegrin to conclude that decision-making authority over classroom affairs in the IGE/MUS schools had devolved on teacher groups (the "unit" faculties) along two vectors of change: a reduction in the discretion normally exercised by individual teachers in their own classrooms and a reduction in the role ordinarily played by the principal of placing limits around that individual discretion (Pellegrin, 1970a).

Following another approach, Pellegrin's questionnaire requested teachers to estimate the amount of influence various parties exerted over "how your school is run," including the principal and teacher groups. Pellegrin found that influence attributed to teachers as a group was consistently higher in the team-organized than conventional schools. Using similar measures the Stanford group found the same. They asked teachers to describe the influence of principals and teacher groups on a set of items relating to school-wide issues and again on a set relating to instructional matters of the teacher's own classroom. They reported markedly higher levels of teacher-group influence and lower levels of principal influence in the team-organized as compared with conventional schools. (We report their tabulations later on in the paper.)

Pellegrin used a third approach which entailed identifying the structure of informal power relations within the school. He reported that the principal dominated the power structure of his three conventional schools, whereas in the multiunit schools the structure was more decentralized and teachers, especially unit leaders, figured more prominently (Pellegrin, 1970b).

Job satisfaction. Using measures of their own creation, the two investigating groups reported greater job satisfaction among teachers in the team-organized schools than among those in the conventional schools. Pellegrin's items focused principally on satisfactions with the immediate work setting, while the Stanford scale can be characterized as measuring mainly satisfaction with the teaching career. Both investigators recognized that the differences could have been due to factors incidental to the organizational form of the schools, such as systematic differences in staff composition or, in the team-organized schools, a general euphoria associated with teaching in an innovative work setting. Indeed, in several sets of analyses Meyer and Cohen (1971) reported a surplus of satisfaction in their "open" schools that could not be accounted for by shifts in decision-making power of collegial groups or the reduction in teacher isolation.

Teacher sentiments regarding work autonomy. Perhaps the most puzzling finding of the exploratory investigations was the evidence obtained by the Stanford group that teachers in the team-organized schools felt they had greater influence over their own classroom instruction than teachers under conventional conditions (Meyer & Cohen, 1971, Chaps. 2 and 3). These researchers had expected that the loss of individual discretion associated with the transference of instructional decisions and responsibilities to the work group would depress the teacher's sense of autonomy in work, but their comparative data were just the contrary. A major part of one chapter in the Meyer and Cohen report was devoted to an attempt to unravel the paradox but without notable success. In the end, they tentatively decided that their measure of

autonomy reflected two different conditions of the work setting: freedom from external interference in teaching (as in the conventional setting) and ability to control the wider resources necessary for teaching (as under the condition of work-group organization).

The Research Questions

These initial studies, of course, left many questions unresolved. Three were uppermost in the present investigation. First was the obvious one of whether the findings would reappear in team-organized schools at other times and places. How far will they generalize?

Second, is it possible that the "effects" of team organization cited in the studies were antecedent to the "cause"? The direction of causation between selection criteria and measured attributes in a comparative research design is purely a matter of conjecture, buttressed only by the implausibility of the alternative causal order. In the present case, though, the alternative is equally plausible. It takes no stretch of the imagination to suppose that such an innovation as the teaching-team structure is more likely to be adopted and brought to fruition in schools where teachers talk about their work, exercise considerable influence in educational affairs, are secure in their feelings of autonomy, and are dedicated to teaching than in schools whose staffs lack these attributes.

Third, assuming causality is in the direction proposed by Pellegrin and Meyer and Cohen, precisely what conditions of the work setting are responsible for the effects on teacher communication and sentiments in the team-organized schools? The Meyer and Cohen report strongly implied

that they were due to a change in organization of instruction--i.e., replacement of the solitary, one-teacher-one-class arrangement by group-conducted instruction--or to the visibility afforded by open-space classroom architecture. It is important to note, however, that neither Pellegrin nor the Stanford researchers systematically observed the manner in which instruction was carried out. Moreover, there are scattered indications throughout their reports that teachers did not universally give up the self-contained classroom arrangement upon the inauguration of the formal "team" structure, and in the absence of measurement we might even presume that some teachers in the supposedly conventional comparison schools did engage in team-conducted instruction, a point recently emphasized by Hall and Loucks (1977).

Conceivably, the effects reported by Pellegrin and Meyer and Cohen were due to the school's managerial structure and attendant changes in the governance system rather than to alterations in the school's work system. According to the doctrine of participatory decision making, the formation in the otherwise flat and undifferentiated managerial structure of elementary schools of small sub-faculties formally empowered to shape affairs of their immediate workplace through decisions they themselves make and to speak with a collective voice on larger issues of the school should increase teacher communication and have salutory effects on job satisfaction. If changes occur principally in the governance system and little in the work system, the classroom teacher's wide latitude of discretion would not be jeopardized and the sense of autonomy would not be depressed.

Methods

A longitudinal study was required to answer the research questions. We undertook such a study in the spring of 1974 when we collected the first of five waves of data in over 40 elementary schools in Kentucky, Tennessee, Virginia, New Jersey, Massachusetts and New Hampshire. Measures of decision-making structures, instructional organization, faculty communication, teacher sentiments, and a variety of other attributes of the schools and their staffs were repeated at six-month intervals through the spring of 1976. Approximately half of the schools had given indications before the first round of data-taking that they would institute the Multiunit organizational model in the following fall, while the other half had been selected by our research staff from the same school districts on the grounds that they gave no signs of changing their managerial structure.

During 1973 the Individually Guided Education movement, supported by federal funds and by the Sears and Kettering foundations, was poised to initiate a substantial number of start-ups of IGE/MUS at the beginning of the 1974 school year, and it was through the state coordinators, regional facilitators, and other officers of this vigorous movement that we located prospective schools for study. A member of our staff met with faculties of the schools to solicit participation in the research endeavor and in a similar manner recruited schools that would serve as controls.

Research Design and the "Treatment" Variable

This report concentrates on 27 schools that precisely fit conditions of the following research design, diagrammed according to the conventions of Campbell and Stanley (1963) and Glass, Willson and Gottman (1975).

Unitized (N = 14)	O_1	XO_2	XO_3	XO_4	XO_5
Nonunitized (N = 13)	O_1	O_2	O_3	O_4	O_5

The subscripted O's represent the five points in time when variables were measured in the schools, at six-month intervals, and X refers to the presence of the "treatment" variable. The dashed line separating the two sets of schools indicates that the schools were not randomly assigned to the "treatment" and control conditions, which of course was not in our power to do.

The "treatment" variable can be conceived generically as the extent of differentiation of the school's managerial structure. The managerial structure of most elementary schools is flat and undifferentiated. There are essentially two hierarchical levels, one consisting of the instructional staff and another of an administrative officer--the principal--perhaps with the addition of a deputy officer in larger schools. The faculty forms a single body, not further differentiated into sub-faculties or smaller operating units and thus unlike the high school with its departmental organization.

The Multiunit School model of Wisconsin, as its name implies, introduces a structure in which the teaching staff is formed into two or more units (sometimes called "teams") charged with operating the instructional program for students assigned to them, and it introduces a new position in the organizational hierarchy--the unit leader. Further, the unit leaders and the principal serve as a cabinet to coordinate unit activities and manage affairs that the units do not handle independently (Klausmeier, Rossmiller, & Saily, 1977).

The X in the diagram represents the presence of a differentiated managerial structure, approximately along the lines of the Multiunit School plan. We included in our study only schools that were fully unitized, such that all grade-level teachers were a member of some unit. Operationally, it was sufficient that the principal or school secretary be able to list the names of the members and leaders of the units and that the teachers, when asked in a questionnaire item, would acknowledge their unit membership. In this way the distinction hinged on the nominal structure, the official designation of positions and responsibilities; whether unit members, leaders, or other bodies acted out their roles and assumed the responsibilities was a matter of separate determination. The absence of an X indicates that the school's managerial structure was of the flat, undifferentiated form we described. We included only those totally without sub-faculty organization, such as grade-level committees or even formal distinctions between primary and upper-grade faculties.

To qualify as an instance of a unitized school (above the dashed line in the diagram) the managerial structure had to be undifferentiated at the time of the first measurement and to be unequivocally differentiated at the time of the second measurement, in the following fall, and to retain the unitized form throughout the remaining points of measurement. Fourteen schools so qualified. The nonunitized set, consisting of 13 schools, adhered to the undifferentiated structure throughout the entire observation period.

It is important to note that the creation of the unitized managerial structure was but one part of a larger, albeit heterogeneous, set of inno-

vative practices that were being urged on the schools. The general themes of "team teaching" and "individualized instruction" ran through the promulgated reforms, but there was no uniform "package" of innovations that characterized the 14 schools. The innovations promoted by local representatives of the IGE movement were catholic in origin, often reflecting their own programmatic interests and ideas, while teachers and administrators of the schools were free to choose among innovative practices known to them, whether from IGE or elsewhere, or to modify components of the IGE plan to suit local conditions. The curricular materials available from IGE were not universally adopted in the schools. Since IGE is an assemblage of a number of current innovative ideas, ranging from differentiated staffing and diagnostic-prescriptive instruction through shared decision making, the uniqueness of IGE/MUS was rarely apparent, except as officials proclaimed themselves an "IGE school." Nor was such a proclamation an infallible clue among schools of the study; in several schools of the unitized set, staff members were unaware of the IGE movement and its trappings.

At the same time, there is reason to presume that staff members in the nonunitized schools similarly were experimenting with various teaching methods, curricular themes, and program conceptions, although perhaps not as vigorously and certainly not in the collective vein as in the unitized schools. We did not attempt to monitor the entire spectrum of possible innovative practices in either set of schools, so we are not in a position to disentangle their effects from those of unit organization per se.

Measures

Descriptions of the manner in which data were obtained from the school sites and combined into specific measures are available in other reports and will not be repeated in detail here.[2] We borrowed some of the measures directly from the Stanford and Oregon studies, enabling us to rule out the possibility that differences in findings would hinge simply on different measurement procedures. At the same time, we added several new ones, including a measure of the missing ingredient in the previous investigations--the form of the instructional organization.

In general, measures of the study focused narrowly on regular classroom (or "grade-level") teachers and the conditions affecting them. Excluded from our concern were teachers of special subjects (e.g., itinerant or permanent teachers of music, art, or physical education), in special programs (e.g., bi-lingual education), and those providing specialized services (e.g., reading specialists, librarians, guidance personnel), as were paraprofessionals and substitute teachers. We took no data from or about such personnel.

A number of measures of individual and organizational attributes were obtained from systematic interviews, staff questionnaires, and other data sources, but we will summarize only those germaine to the present report.

Instructional interdependence. The measure in this report concerns whether or not a teacher taught the same pupils in the same subjects as one or more other grade-level teachers in the school--teaching the common pupils at least once during ten consecutive school days. If so, the teacher was said to be linked in instructional interdependence with the other teacher(s). The necessary data came from daily "teaching logs" which teachers

were asked to keep for a two-week period regarding their instructional contacts with pupils. This measure could also be scaled for the intensity of interdependence, but we make no use of the scale here, relying instead on its minimal value. School-level scores were obtained by a simple count of the number of interdependence linkages among the faculty members.

Collegiality of the decision structure. This measure was planned to provide a reasonably objective description of the locus of decision-making authority by tracing the manner in which decisions are made, and on whom they are binding, with respect to a large number of specific issues. The issues were limited to matters concerning the educational program of the school as these came to bear on the work of the classroom teachers. The data-taking procedures entailed in-depth interviews, lasting about an hour at each data-taking wave, with four or five teachers especially chosen for the likelihood that they would be well informed regarding practices and conditions of their school. Interviews and the initial coding of responses were sub-contracted to an experienced survey organization, the Institute for Survey Research at Temple University. The informant interviews, along with the self-administered questionnaires delivered in advance, ordinarily generated over 60 issues per informant, each classifiable according to type. We defined a collegial decision (Type C) as one in which the set of teachers whose task performance is expected to be governed by the decision are exclusively responsible for making it. Types we have distinguished from this include decisions made exclusively by the school's principal or other administrators (Type P), those made by agents or agencies outside the given school (Type O), and "shared" decisions made by some or all affected teachers joined by the principal (Type S). A discretionary decision (Type D) describes

the circumstance in which a teacher reaches an individual decision regarding task performance that governs no one's behavior but his or her own.

Preliminary analyses led us to group the issues into three domains with similar configurations of the decision types. (See Footnote 2.)

Instructional processes (Domain I)--issues relating to when and how long subjects are taught, teaching methods used, disciplinary practices applied, instructional materials used, and the like. Decision structure dominated by discretionary decisions.

Deployment of teachers and pupils (Domain II)--issues relating to the assignment of teachers and pupils to classes, the formation of sub-groups of pupils, and teaching assignments with respect to them. Decision structure ordinarily dominated by principal-made decisions.

Systemic decisions (Domain III)--issues relating to curricular areas to be covered, textbook adoptions, and methods of reporting pupil progress to parents. Decision structure characteristically dominated by Type O decisions.

Unlike most other measures of the study, collegiality of the decision structure is an integral measure applying to the school as a whole. It cannot be disaggregated to apply to sub-sectors. Operationally, the measure was the percentage of Type C decisions in each of the domains.

Teacher-teacher communication. Between teacher communication was based on a near-sociometric procedure in which respondents were asked to indicate other teachers in the school with whom they talked and the frequencies with which they talked to them about "classroom activities," "school-wide matters," and "matters unrelated to school or teaching." The method was the one used

by Charters (1969). Intensity was the mean frequency (expressed roughly as a weekly rate) of the teacher's discussions with colleagues on each of the topics; the intensity score for the school was the mean frequency of all reciprocated communication contacts among the faculty.

Teacher attributions of influence. We used the Stanford measures of influence mentioned above and computed scores as they had, except we retained the scores in continuous form instead of trichotomizing them (Meyer & Cohen, 1971, Chap. 2). **School means were derived by aggregating individual scores for each measure (the influence of the principal and teacher groups over school affairs and over the school's classrooms.**

Teacher sense of autonomy. Our research staff developed a 24-item summative scale to measure the teacher's sense of autonomy in teaching, supplementing the five-item measure employed in the Stanford study.[3] Based on the conceptualizations of Blauner (1964) and Lortie (1969, 1973) it tapped feelings of control over the pace of work, freedom to chose teaching techniques and the criteria for assessing student performance, and freedom from work pressures and from surveillance by others. Using a Likert-style response format, teachers answered such questions as these.

> On the whole, my students and I can establish the rhythm of daily activities rather than have it determined for us by people or events outside the classroom.
>
> Generally speaking, I feel as though the teaching techniques I can use are closely controlled in this school. (Reverse scoring)
>
> I feel I have little to say over how the progress of my students is judged. (Reverse scoring)
>
> I simply cannot find the time I need in this school to do the kind of job of teaching I know I am able to do. (Reverse scoring)

> This is one school, at least, in which I do not feel as though someone were peering over my shoulder at the way I teach.

It was scored on a range from 1.0 to 6.0, the high value representing strong sense of autonomy. Reliability as estimated by Cronbach's Alpha was .90, while the test-retest correlations obtained in the course of the study ranged from .60 to .74, taken at six-month intervals.

Job-career satisfaction. We used the same job satisfaction measure that the Stanford group had devised for their study, which asked five questions covering satisfaction with the present job, satisfaction with career choice, and likelihood of remaining in teaching if offered attractive alternatives. Summed scores, possibly ranging from 5.0 to 22.0, crowded the high end of the continuum with a mean of 17.75 and a standard deviation of 3.35, giving the distribution a strong negative skew. The same was observed in the Stanford study (Meyer & Cohen, 1971, p. 50) and, of course, is a standard condition of measures of teacher job satisfaction. The estimated internal consistency of the measure was .80 (Cronbach's Alpha) and test-retest correlations, lagged six months, were approximately .77.

Response rates. The rates of usable questionnaire returns from teachers was 90% in the first data-taking wave and increased to about 96% in subsequent waves. The response rate for teaching logs, used to measure task interdependence, was 83% in the first round and about 92% thereafter. The lower rate in the initial wave was due, in part, to the fact that our rosters to classroom teachers had not yet been stabilized, so the instruments could not be precisely targeted. Response rates tended to be slightly higher in the nonunitized than the unitized schools.

The Sample of Schools

The sample of unitized and nonunitized schools was purely purposive, chosen to meet conditions of the study's design. Except as noted, unitized and nonunitized schools did not differ importantly from one another, although no attempt had been made to match the two sets with respect to anything except district location.

Schools. All schools lay east of the Mississippi River, principally in the New England, Mid-Atlantic and Border states. Some were inner-city schools serving low-income families, others were in affluent and not-so-affluent suburbs, and still others in small communities of rural America. Most, but not all, were public schools; four parish schools of a Roman Catholic diocese were included. The public schools were located in 12 different school districts, one of them among the larger districts of the United States with 135,000 students, while the smallest district enrolled 2,500 elementary and secondary students. Per-pupil expenditures of the districts ranged from $460 to $1,440 in 1974 dollars.

The elementary schools themselves were heterogeneous with respect to size, structure, and other circumstances. They ranged in size from a faculty of eight serving 200 students to one of nearly 30 serving 800 students (Mdn= 13 classroom teachers, 362 pupils). The grade organization varied substantially within the sample: several included the seventh and eighth grades, a few were essentially primary or middle schools, and about half offered kindergarten programs. Most of the schools had a traditional corridor-classroom architectural design, but a few incorporated areas arranged according to an open-space plan, typically as additions to older buildings.

Staffing patterns. Unitized and nonunitized schools were alike in the number of instructional aides, non-teaching specialists, and teachers of special subjects. Most of the schools had a full-time building administrator, and a number also had assistant principals--either full-time appointees or classroom teachers who served part-time. Principals in the unitized schools were more likely to be female than their nonunitized counterparts, were younger, had fewer years of administrative experience, and had been in their present principalship a shorter length of time.

Teaching staffs of the two sets of schools were alike in sex distribution (92% female) and educational attainment (modally, bachelor's degree plus credits toward the M.A.). However, teachers in the unitized schools were younger and less experienced than those in nonunitized schools and, by other measures included in the questionnaire, somewhat less traditional in their educational beliefs.

Staff retention. Schools of the study were subject to an annual staff turnover rate of about 25%. Tabulations of the teacher rosters for the two sets of schools revealed that less than two-thirds of the teachers who were present in the spring of 1974 were still on the faculties of their respective schools two years later, in the spring of 1976.

	Unitized	Nonunitized	Total
Initial cohort, spring 1974	251	197	448
Number remaining, spring 1976	155	130	285
Per cent remaining	61.8	66.0	63.6

While attrition was somewhat greater among the unitized teachers, the difference between them and the nonunitized teachers was not dependable by the Chi-square test at the .05 level.

Analysis Approach

The logic of our study design was to duplicate conditions of the comparative studies of Pellegrin's and Stanford's in which measures were taken in a number of schools, sorted according to a criterion of their organizational form, except that we would have the advantage of measures taken before their forms had become distinctive. The criterion, in our case, was a differentiated vs. an undifferentiated managerial structure in the spring of 1976 (T_5). Schools that did not cleanly reflect conditions of a comparative study were not included in the present analyses.

Our main presentations, then, concern the T_1 and T_5 measures only. Our statistical tool is the analysis of covariance, using a hierarchical multiple regression procedure to achieve the end (Kerlinger & Pedhazur,1973). In the first analyses, for instance, T_5 values of the relevant dependent variable were regressed on their T_1 values (the autocorrelation) and then on the unit organization variable, dummy coded as 1 for the unitized schools and 0 for the nonunitized schools. The increment in the variance explained by the unit organization variable was tested for significance at the .05 level by the appropriate F test and evaluated with 1 and (N - 3) degrees of freedom. We standardly tested for an interaction effect, using a product term (T_1 values multiplied by the dummy coded unit organization variable) as the third step in the regression routine, before presenting the results.

Results

Character of the Multiunit Structure

Before reporting results of the systematic analyses we will say a word about the character of the managerial structure of the unitized

schools. All, of course, established formal units in the fall of 1974 and retained them through the following two school years; that was the basis on which the unitized schools qualified for inclusion in the study in the first place. Units typically consisted of three, four, or perhaps five teachers, and anywhere from two to seven units were formed in a school, depending importantly on staff size. Nearly half of the units comprised teachers of the same grade level; cross-grading of units mainly appeared in small schools where it was the only alternative. Unit meetings were held at least once or twice a week in most of the schools, usually at times set aside during the regular working day, although in five schools the meeting frequency, which had been high in the first year, had tapered off to a monthly rate or less by the spring of 1976.

All schools created the position of unit leader. Chiefly, the position was appointive (by the principal), but in a few schools the choice of leader was left to the unit membership. With a few exceptions, no special perquisites attached to the position, and it is fair to say from our various sources of evidence that the leader's role had not emerged as an especially distinctive or powerful one by the end of two years. Teachers had apparently opted for the "horizontal-collegial" form of authority arrangements rather than the "vertical-bureaucratic" form, in Lortie's terms (1964). Following the format of the Multiunit School model, all but one of the unitized schools formally constituted an Instructional Improvement Committee--a cabinet comprised of the principal and the unit leaders--at the outset of the implementation period. These became fixed features in about two-thirds of the schools, meeting on a regular monthly schedule, but were generally nonfunctioning in the other third.

Change in the Governance and Work Systems

Means of scores are given in Table 1 for the 14 unitized and 13 nonunitized schools "before" and "after" the new managerial structure was installed in the former (T_1 and T_5) for measures of the work and governance systems. Values for the measures of attributed influence and communication intensity, it should be recalled, were aggregated for school means before averages were taken for the schools by type. Teachers in one of the unitized schools returned an insufficient number of teaching logs at most of the data-taking waves to permit measuring instructional interdependence, so the means for this variable were based on 13 rather than 14 unitized cases. The table also indicates differences between unitized and nonunitized means that were statistically significant by the t test (at the .05 or .01 level) within each data-taking wave.

Table 1

A scan of the T_5 means in the column on the far right reveals that the schools differed significantly in the expected direction on most of the measures, the obvious exceptions being three of the four measures of attributed influence. (We had not expected a difference in communication about nonwork matters, and the absence of a difference simply lends credence to the school-specific character of the forces responsible for the other communication differences.) The column of means for T_1 shows that the schools differed significantly on just one of the measures before the change in

Table 1

Means of School Scores for Unitized and Nonunitized Schools on Work and Governance Variables, T_1 and T_5.[a]

Variable	School Type	T_1	T_5
Instructional Interdependence[b]	Unitized	1.8	3.7
	Nonunitized	1.3	.7**
Communication Intensity, Classroom Topics	Unitized	2.62	2.32
	Nonunitized	2.59	1.97*
Communication Intensity School Topics	Unitized	2.20	2.09
	Nonunitized	2.16	1.80*
Communication Intensity Nonwork Topics	Unitized	2.79	2.42
	Nonunitized	2.43	2.30
Collegial Decisions, (Type C), Domain I	Unitized	10.6	20.1
	Nonunitized	8.0	4.3**
Collegial Decisions, (Type C), Domain II	Unitized	27.9	45.4
	Nonunitized	15.0*	7.3**
Collegial Decisions, (Type C), Domain III	Unitized	11.1	15.3
	Nonunitized	6.7	4.2**
Teacher-Group Influence, Own Class	Unitized	2.77	2.79
	Nonunitized	2.82	2.46**
Teacher-Group Influence, School Affairs	Unitized	2.97	3.00
	Nonunitized	3.15	2.82
Principal Influence, Own Class	Unitized	3.31	2.94
	Nonunitized	3.20	3.03
Principal Influence, School Affairs	Unitized	3.94	3.61
	Nonunitized	3.91	3.82

[a]No. of cases: unitized = 14, nonunitized = 13. Significance (*t* test) compares unitized and nonunitized schools within T_1 or T_5.

[b]Data missing from one unitized school.

*$p < .05$

**$p < .01$

managerial structure--the percentage of Type C decisions in the domain of pupil and teacher deployment. However, closer scrutiny demonstrates that the unitized schools consistently had higher, although not necessarily significantly higher, scores on each of the measures that distinguished them significantly two years later. Thus, the more sensitive analysis procedure, adjusting for the pre-implementation "head start" of the unitized schools, is required to determine the effects of innovation.

Table 2 displays the results of the regressions for the various measures, their T_5 values considered as dependent variables. We report standardized regression coefficients for the pre-implementation values of the measures (T_1) and for the dummy-coded unit organization variable (School Type) and show the increment in variance explained by the latter variable after taking account of the effects due to pre-implementation differences. In none of these analyses, incidentally, was the interaction term significant at the .05 level. Since the distribution of instructional interdependence scores manifested a strong positive skew at each data-taking wave (about half of the nonunitized schools had no pairs at all), a log transformation was applied to the values prior to analysis. Also, as mentioned above, the absence of data from one of the unitized schools reduced the number of cases to 26 for this variable.

Table 2

The results in Table 2 lead to the same conclusions as those indicated by the simple t tests. The increment in variance explained by school type,

Table 2

Effects of Unit Organization on Work and Governance Variables: Regression of T_5 School Scores on T_1 Scores and School Type.

(N = 27)

Dependent (T_5)	Independent	Beta	R^2	R^2 Increment
Instructional interdependence[a]	T_1 Score	.154	.062	
	School type[b]	.642	.466	.404**
Communication Intensity, Classroom Topics	T_1 Score	-.358	.120	
	School type	.415	.292	.172*
Communication Intensity, School Topics	T_1 Score	-.043	.001	
	School type	.408	.167	.166*
Communication Intensity, Nonwork Topics	T_1 Score	-.098	.002	
	School type	.166	.027	.025
Collegial Decisions, (Type C) Domain I	T_1 Score	.027	.020	
	School type	.664	.448	.428**
Collegial Decisions (Type C) Domain II	T_1 Score	.048	.111	
	School type	.662	.468	.357**
Collegial Decisions, (Type C) Domain III	T_1 Score	.171	.100	
	School type	.446	.278	.178**
Teacher-group Influence Own Class	T_1 Score	.304	.070	
	School type	.512	.430	.260**
Teacher-group Influence, School Affairs	T_1 Score	.395	.091	
	School type	.361	.213	.122
Principal Influence, Own Class	T_1 Score	.397	.129	
	School type	-.205	.170	.041
Principal Influence, School Affairs	T_1 Score	.254	.056	
	School type	-.303	.147	.091

[a]Log transformation of scores. N = 26 due to missing data.

[b]School type dummy coded: unitized = 1, nonunitized = 0.

*$p < .05$

**$p < .01$

after adjusting for T_1 differences, was significant for all of the work and governance system variables excepting three of the four attributed influence measures. The higher incidence of collaborative teaching in the unitized schools and the greater frequency of faculty communication about intimate affairs of the classroom support the conclusions of Pellegrin and of Meyer and Cohen about the reduction in isolated work relationships. Communication about larger affairs of the school became more intensive as well. The decision structure measures affirm the twin vectors of change noted by Pellegrin. Decisions that largely had been left to the discretion of individual teachers (Domain I) and those that mostly had been the responsibility of principals (Domain II) now more often were made by groups of teachers whose behavior was affected by them. We were surprised by the significant difference in collegiality of the so-called systemic decisions (Domain III), considering that decisions in this class are made predominantly at the school district or state level and would tend to apply to unitized and nonunitized schools alike. Inspection of the issues making up this domain revealed that the increase occurred only with respect to textbook adoption; collegial groups in the unitized schools played a much larger role in selection decisions than they had earlier.

The measures of governance by means of aggregated influence scores do not show the sharp differences reported by Meyer and Cohen. Where they reported higher group influence and lower principal influence scores in their "open" schools than in the "self-contained" schools, the present study finds a difference only for the influence of teacher groups over affairs of the classrooms. We might note that teachers' influence attributions were

only modestly related to our measures of the control of educational decisions. The correlation between school means of teacher-group influence on the classroom and Type C decisions in the instructional processes domain, for instance, was .32 (calculated over the five data-taking waves, treating the school at each wave as a new case). Other relevant correlations, such as between principal influence and Type P decisions, were of about the same magnitude or lower.

While none of the interaction terms in the regressions of Table 2 reached significance, the one for the principal's influence on the classroom explained an unusually large proportion of variance (an additional 11%, $p = .08$). In light of this, the T_1-T_5 relationship was examined separately in the unitized and nonunitized schools. In the latter principal influence at T_5 was well predicted by the level of influence at T_1 ($r = .63$), but in the unitized schools the relationship was weak ($r = .27$). Scattergrams of the school scores suggested that unitized principals responded quite variably to the introduction of the new management structure. Many principals were reported to have maintained or even increased their prior levels of involvement in affairs of the teachers classrooms, but some were seen to have made a substantial withdrawal.

We will return to the discrepant findings with respect to attributions of influence shortly. Meanwhile, some qualifications are in order regarding the work and governance system effects in Table 2.

The effect of unit organization on instructional interdependence should not be construed as a mass conversion to team teaching in the unitized schools. Even in schools with the largest number of interdependence linkages many

teachers continued to teach independently; in only three schools did instructional interdependence implicate more than a simple majority. Moreover, most of the interdependencies we observed were not especially intensive, often confined to teachers sharing pupil instruction in just one subject area, sometimes no more often than once or twice a week. We found only four instances throughout all of the schools that approximated the highly intensive collaboration indicative of genuine team teaching (Shaplin, 1964), and one of these appeared in a nonunitized school. The interdependence linkages, too, tended to be transitory, appearing at one data-taking wave only to disappear at the next. Thus, the effect of innovation did not appear to operate as a system characteristic, simultaneously transforming work arrangements of the entire staff. Rather, it seems to have been more on the order of a "diffuse encouragement" for teachers to seek out collaborative relationships--an encouragement to which some teachers acceded and others did not.

Nor should the magnitude of shifts in decision structure be overestimated. Despite the trends toward collegial governance in the unitized schools, it was still the case that the large majority of Domain I decisions were matters of individual discretion, the plurality of Domain II decisions still implicated the principal, and the plurality of Domain III decisions were settled beyond the school-building doors. In only two small schools could the change to collegial control be regarded as revolutionary--where such groups came to dominate the decision structure in all areas (except Domain III). Furthermore, there is reason to believe that changes in governance conditions were uneven from one sector of the school to another. We cannot document this with the decision structure data, but other evidence

for the unitized schools suggests that the faculty units varied widely in the degree to which they developed into significant entities (Packard, Charters, & Duckworth, 1978, esp. Chap. 10). Some appeared to have been units in name only.

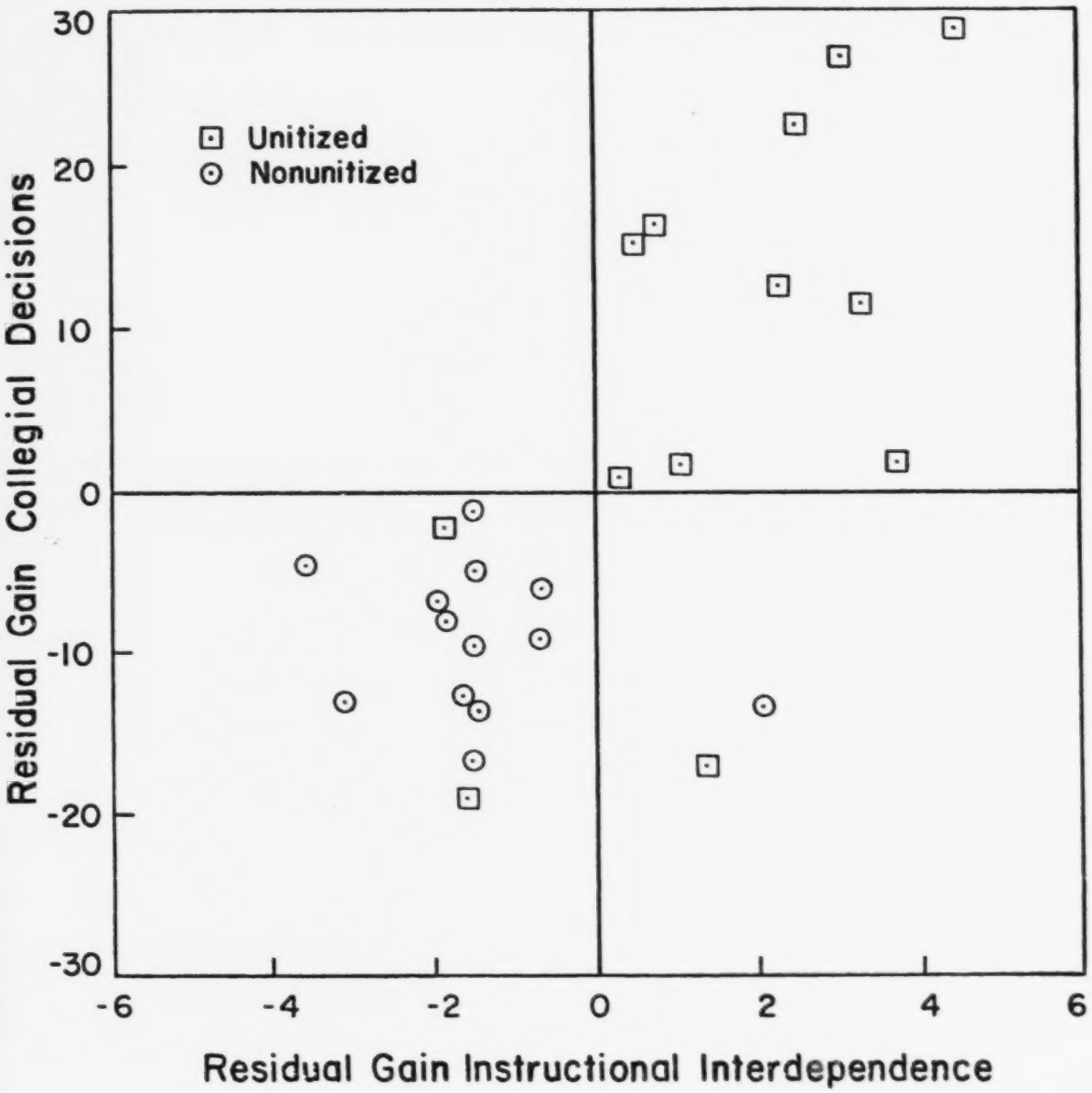
Figure 1 is a visual display of the main results, where residual gains in Type C decisions (averaged over the three domains) are plotted against residual gains in instructional interdependence and unitized and nonunitized schools are represented as boxes and circles, respectively. Correlation between the two gains scores is strong, $r = .69$. It is obvious that the unitized schools changed differentially; a number of them gained substantially on both the governance and work system dimensions, while two looked little different at the end of two years from schools that did not embark on an innovative course. Mere change in de jure organizational structure was not sufficient to produce de facto alterations in work and governance.

Figure 1

Effects on Teacher Sentiments

In Table 3 we report results of analyses for teacher sense of autonomy and job-career satisfaction paralleling Tables 1 and 2, except that here we move from the school to the individual teacher as the unit of analysis. We use scores of the teacher cohort who remained in the schools from T_1 to T_5.

Figure 1. Residual gain in collegial decisions against residual gain in instructional interdependence for Unitized and Nonunitized schools.[a]



[a]Residual gains from T_1 to T_5. Collegial decisions is mean of Type C Decisions in Domains I, II, and III.

Table 3

The means in the upper part of the table show, for sense of autonomy, that the unitized cohort had lower scores than the nonunitized cohort at T_5, but they had also been lower before implementation began. After adjusting for this in the regression analysis, no difference remained at T_5 that could be attributed to events of the intervening period in the unitized schools. The additional 1% of variance explained by school type did not reach our criterion of statistical significance.[4]

In the case of the job-career satisfaction measure, teachers in the two schools did not differ either at T_1 or T_5. While a superfluous test, the regression analysis reiterates the fact that the innovative program had no discernible effect on the job-career satisfaction scores of the teachers who had been involved in the implementation efforts.

In light of the differential changes among the unitized schools depicted in Figure 1, another analysis was conducted to test the possibility that teacher sentiments might depend on de facto alterations in the work setting rather than on the formal (and perhaps empty) creation of a multiunit structure. For this, teacher sentiment scores were regressed on the residual gains in instructional interdependence and in Type C decisions (averaged for the three domains) as per Figure 1 as indicators of the amount of change. (The teacher cohort of one school was lost by virtue of the absence of data to measure instructional interdependence.) The results in Table 4 indicate that neither job-career satisfaction nor sense of autonomy

Table 3

Means and Regression Analyses of Teacher Sentiments for Teacher Cohort in Unitized and Nonunitized Schools.

A. Cohort Means[a]

Variable	School Type	N	T_1	T_5
Sense of Autonomy	Unitized	113	4.69	4.57
	Nonunitized	119	4.84*	4.77**
Job-career Satisfaction	Unitized	109	18.36	17.98
	Nonunitized	117	18.62	18.39

B. Regression Analyses

Dependent (T_5)	Independent	Beta	R^2	R^2 Increment	df
Sense of Autonomy	T_1 Score	.571	.299		
	School type[b]	-.121	.310	.011	1/229
Job-career Satisfaction	T_1 Score	.665	.445		
	School type	-.033	.446	.001	1/223

[a] *t* test compares unitized and nonunitized within T_1 or T_5.

[b] School type dummy coded: unitized = 1, nonunitized = 0.

*$p < .05$

**$p < .01$

was affected by the magnitude of change in the 26 schools. Gains in instructional interdependence and collegial decision making combined explained an additional 1% of the variance in sense of autonomy scores at T_5, a nonsignificant increment, and virtually none of the variance in job-career satisfaction scores.

Table 4

Governance and Autonomy: Some Further Analyses

While the findings we have presented indicate that observed alterations in neither the work nor the governance system of the unitized schools had an important effect on teacher sentiments, other analyses of a cross-sectional variety suggest that staff sentiments, particularly teacher feelings of work autonomy, were not entirely disassociated with conditions of the workplace. Specifically, we found rather consistently that teacher sense of autonomy was linked with imputations of influence, especially the principal's influence, and that the influences acted on sense of autonomy in opposing directions. Autonomy, however, was not associated with the teacher's immediate teaching arrangements.

Table 5 shows the patterns of association. Here the indicators of governance are the teacher's four imputations of influence (no longer aggregated for school means). The two indicators of work arrangements are a yes-no code of whether the teacher was linked by instructional interdependence with

Table 4

Regressions of Teachers Sentiments at T_5 on Residual Gains in Instructional Interdependence and Collegial Decision Making in 26 Schools.[a]

Dependent (T_5)	Independent	Beta	R^2	R^2 Increment	df
Sense of Autonomy	T_1 Score	.536	.301		
	Interdep. Gain	-.043	.310	.009	2/222
	Colleg. Gain	.026	.310		
Job-career Satisfaction	T_1 Score	.692	.478		
	Interdep. Gain	.046	.480	.001	2/215
	Colleg. Gain	-.018	.480		

[a]Data missing from one school.

at least one other teacher and the mean frequency with which the teacher talked to colleagues about classroom matters. Length of teaching experience was the sole outside variable that simultaneously correlated with work and governance indicators and sense of autonomy scores and which, in the cross-sectional analysis, posed the danger of spuriously inflating the strength of association between the variables of interest. It was introduced first in the regression analysis as a control. The analyses, given separately for unitized and non-unitized schools, are based on the data collected at T_5.

Table 5

The beta coefficients indicate that the collaborative character of the teacher's work arrangements had little to do with his or her feelings of autonomy. These feelings, however, appear to be responsive to perceived authority relationships.[5] The signs of the beta coefficients suggest that teacher autonomy was the resultant of countervailing forces--an autonomy-enhancing force emanating from the ability of teacher groups to influence educational affairs of the school and a strong autonomy-depressing force from the principal's control of the teacher's classroom performance. The data seem consistent with Meyer and Cohen's view that feelings of autonomy reflect both freedom from interference (by the principal) and ability to control resources needed for teaching (through the colleague group).

However interpreted, the presence of countervailing forces sheds light on discrepancies in the findings of the present study and the Stanford study

Table 5

Regressions of Sense of Autonomy at T_5 on Indicators of Work and Governance at T_5, Separately for Unitized and Nonunitized Schools.[a]

Independent	Beta Unitized	Beta Nonunitized
Teaching experience	.06	.16*
Instructional Interdependence[b]	.00	-.02
Communication Intensity, Classroom	-.06	-.01
Teacher-group Inf., Own Class	-.02	-.06
Teacher-group Inf., School	.18*	.07
Principal Inf., Own Class	-.35**	-.35**
Principal Inf., School	.08	.14

[a]Data missing for teachers in one unitized school. Degrees of freedom: unitized = 1/174, nonunitized = 1/170.

[b]See text for code.

*$p < .05$

**$p < .01$

with regard to autonomy feelings. For Table 6 we compare the mean attributed influence scores from the trichotomized percentage tables given by Meyer and Cohen (1971, Chap. 2) and comparable means for our own data at T_5. The table emphasizes comparisons between the "experimental" schools and between the "control" schools of the two studies. The mix of the opposing forces was substantially different among the four sets of schools. Among the "experimental" schools the autonomy-augmeting force of teacher group influence was considerably stronger in the Stanford schools than the schools of the present study. The autonomy-depressing force of principal surveillance of teaching performance was about the same. Stanford's "control" schools, compared to ours, had principals who exerted unusually strong influence over the teacher's classroom affairs and teacher groups that exerted relatively high influence over school affairs.

While the percentage-based data are too crude to draw precise implications for autonomy scores, there is no question but that the schools differed in the mix of the two forces.

Table 6

Discussion and Conclusions

Our data give a mixed answer to the question of whether conclusions of the Stanford and Oregon studies would generalize to other times and places. In certain respects the answer is in the affirmative, but if we consider measures that duplicated those of the earlier investigations the answer is mostly no.

Table 6

Comparisons of Attributed Influence Scores Between "Experimental" Schools and Between "Control Schools of Two Studies

	Mean Score[a]	
	Teacher-group Influence School Affairs	Principal Influence Own Class
"Experimental" Schools		
Unitized (N = 214)	1.45	1.96
Open (N = 110)	2.18	1.99
Difference[b]	.73*	.03
"Control" Schools		
Nonunitized (N = 193)	1.26	2.12
Self-contained (N = 120)	1.55	2.23
Difference[b]	.29*	.11*

[a]Means computed from trichotomized distributions. Unitized and nonunitized values for T_c. Source for open and self-contained values: Meyer and Cohen (1971), Chapter 2, Tables 6, 7.

[b]Significance computed by Chi-square test on frequencies of original contingency tables, 2 df.

*$p < .05$

The greatest paradox lies in our findings concerning the governance system. Although our relatively "hard" measure of decision structure detected the expected change toward collegiality in the unitized schools, three of the four attributed influence measures failed to show the pronounced differences reported in the Stanford study. One would have anticipated that the perceptually-based measures would exaggerate them. Indeed, it was for this very reason that we developed the more objective procedure for describing organizational decision structure. Other evidence, too, had suggested non-correspondence between perceptual and objective indicators of organization structure (Pennings, 1973). But exaggeration was not the case. We must only suppose, at least for the time being, that teacher reports of influence captured subtleties of governance not represented in our structurally-oriented measure.

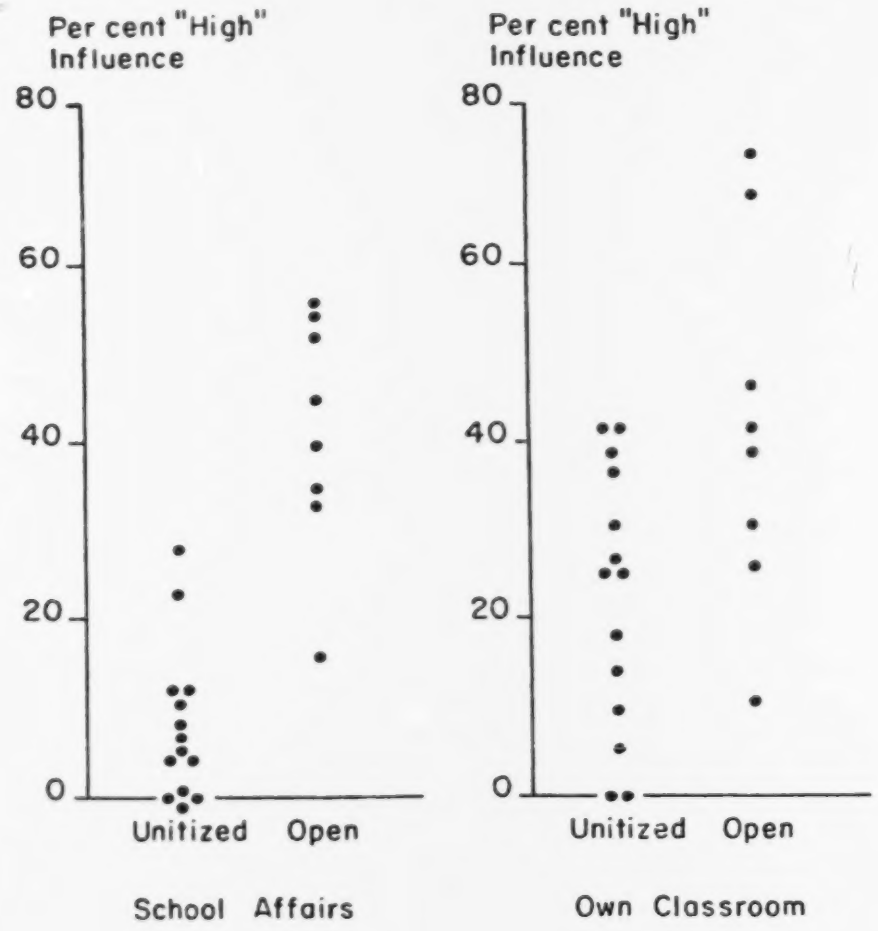
Assuming the attributed influence scores depicted veridical conditions of governance, the evidence indicates that collegial groups had not developed into significant bodies under the Multiunit model to the extent they had in the open-space schools of Stanford. The magnitude of the difference is dramatized in Figure 2, using the school-by-school data given by Brunetti (1970) for the Stanford study for comparison. One can only speculate about the character of the two innovations that produced such differing levels of collegial influence, considering the numerous unplumbed variations in the circumstances of the studies. One factor that may be significant is the format of the innovation itself. The Multiunit model was an officially promoted, deliberately planned blueprint of managerial structure imported from the outside; the team-organization of the Stanford schools, we suspect, was a more spontaneously emergent scheme.

Figure 2

Why did we find no relationship between the teacher's sense of autonomy and his or her implication in collaborative teaching? It is eminently reasonable that the transfer of instructional responsibility from the insulated teacher in the self-contained classroom to a collective of peers, no matter how harmonious the group, would constrain the teacher's freedom of choice, a freedom which Lortie (1969, 1975) and other observers say teachers guard so jealously. As we noted earlier, the collaborative arrangements we observed were voluntaristic, transitory, and non-intensive; they did not appear to have restricted professional discretion in matters of central concern. The Stanford investigators have reported similar observations regarding collaborative teaching in their recent study (Cohen, Deal, Meyer & Scott, 1978).

Autonomy feelings, as we noted, seem to be the resultant of two forces, the power of the collegial group to control the resources and environment of teaching and, more strongly, the teacher's freedom from supervisory control over technical performance. In these regards the principal's responses to the Multi-unit innovation seems important to understand (Pellegrin, 1970b). We have yet to pursue the matter, but evidence suggests that some unitized principals relinquished their hegemony over instructional affairs of the school; others increased it, thereby off-setting gains that might have been realized in teacher autonomy. In any event, it is reasonably clear that feelings of work autonomy depend upon the particular mix of forces prevailing in the schools' governance system at a given time.

Figure 2. Distributions of Unitized and Open schools by per cent of teachers reporting "high" influence of teachers groups on school affairs and on own classroom.[a]



[a]Unitized school data for T_5. Data for Open schools from Brunetti (1970, Appen. D).

The present study did not replicate the earlier findings about job satisfaction. We lean to the interpretation that the particular measure we used, borrowed from the Stanford investigators, tapped a highly stable individual attribute relatively insensitive to short-run events of the worksetting. The means hardly varied through the five data-taking waves, and the autocorrelation over the two-year period was .67 and considerably higher for shorter intervals. This interpretation is consistent with other analyses reported by the Stanford authors (Meyer & Cohen, 1971, pp. 90-91).

The longitudinal character of our study pointed up additional questions, two of which are worth considering here. The data in Tables 1 and 3 indicate systematic and sometimes significant differences between the unitized and nonunitized schools before implementation began. We can entertain, although not decide between, two hypotheses. The differences may signify that changes had already begun toward collegial governance and collaborative teaching before we were able to reach the schools with our data-taking machinery for the "pre" measurement. Alternatively, the "pre" differences may distinguish the kind of elementary school most ready to adopt and implement an IGE/MUS style of innovation; a school that already displays an inclination toward collegial governance and team teaching.

The same tables reveal another noteworthy fact. Substantial changes can be observed in scores for the base-line schools, where nothing out of the ordinary was supposed to be happening. Why should the nonunitized schools, for instance, show regular erosion in collegial decision making--a trend mimicked by the attributed influence scores? We could allay our concern that "instrument fatigue" was the responsible agent in certain of the measures (by

conducting special analyses comparing scores of teachers who had responded to the questionnaire differing numbers of times), but it cannot be discounted altogether. It is possible, too, that genuine secular trends were at work to affect the measures. Until more studies have been conducted using repeated measures of organizational properties there is little to go on in deciding whether the trends and fluctuations we observed in the scores were artifactual or real. Meanwhile, the through-time vagaries impressed on us the importance of including "control" schools in the design of longitudinal studies of innovation.

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Footnotes

[1]A detailed account of the two studies and their findings, including new compilations of their basic data, are given in Charters (1973). This source is especially helpful with regard to the Pellegrin study, since much of his material remains unpublished. In another source, Charters (1978) reported a statistical reanalysis of key tables of the Meyer and Cohen study using the method of log-linear analysis.

[2]General sources for the descriptions are Packard, Carlson, Charters, Moser, and Schmuck (1976) and Packard, Charters and Duckworth (1978). Technical appendices of the former source are available as separate documents: W.W. Charters, Jr., "Task Interdependence Among Teachers" and "Sense of Teacher Work Autonomy;" John S. Packard, "The Norm of Teacher Autonomy/Equality;" and Packard and Richard O. Carlson, "Control Structure in Elementary Schools." Details of the analysis procedures leading to the measure of collegiality of the school's decision structure are reported by Thomas D. Jovick, "Creating Indices from the Control Structure Interview through Data Collapsing and Multidimensional Scaling," 1978. Readers may obtain the technical reports from the Center for Educational Policy and Management, University of Oregon, Eugene, Oregon.

[3]The Stanford index was based on a variant of the attributed influence questions, in which the teacher was asked, "How much influence do you have over your own. . .," followed by the five classroom related issues. While we asked these questions also, we will not report on the Stanford measure here, partly because of its marginal reliability (.75 by Cronbach's Alpha).

Correlations between the two measures of teacher autonomy were in the neighborhood of .50, and they generally yielded similar results in parallel analyses.

[4]The effect of school type on sense of autonomy fell just short of the 5% criterion of significance ($p = .052$). The negative beta weight indicates, if this effect were to be taken seriously, that unit organization and the accompanying changes in the unitized schools depressed feelings of autonomy. A statistically significant effect ($p = .032$) was found for the measure of autonomy employed by the Stanford researchers, with school type explaining an additional 1.8% of the variance in T_5 scores. The effect, similarly, was in the direction of reducing autonomy in the unitized schools. These findings are discordant with the results of the Meyer and Cohen study but are in keeping with their original expectations concerning the impact of team organization on the individual teacher.

[5]These findings stood up under two kinds of cross-validation: an analysis using T_1 data and a time-lagged analysis in which T_5 sense of autonomy scores were regressed on independent variables measured at T_4, six months earlier. The latter was conducted to eliminate the possibility that associations between the dependent and independent variables were inflated by correlated error terms, an especially potent hazard in the case of teacher reports of influence which were drawn from responses to the same questionnaire as the sense of autonomy measure.